

MxD 16-03-01	Category: PO to 1 st Article, Recurring Manufacturing, Engineering Change
Title:	Automated CNC Process Planning Software: CNC-RP
Completion Date:	2018-08-15
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Problem Statement:

We lack a direct digital manufacturing method for short run, prototype or service parts made via CNC machining. Problem is that fixture, setup, tooling and NC code generation directly from a CAD model without significant skill and time is not possible. We cannot afford the hours or days it takes to prepare to machine one or a few parts.

Deliverable:

The key deliverable is a plug-in for a CAM package (in this work, MasterCAM).

Summary:

This solution allows for unskilled operation of a CAM package, resulting in CAD-to-NC code in minutes. The approach is akin to the “push-button” nature of Additive Manufacturing, but with CNC machining accuracy. CNC-RP is available as an installer, and will load the requisite libraries and definitions, instructions to create a toolbar in the CAM environment and setup/use of the software and machine.

Industry Use Case:

- CNC-RP would be an optional mode of operating both CAM and milling assets.
- When a short run, prototype, or service part is needed, the user will load a part model using the CNC-RP plug-in and interface.
- Resulting NC code and setup sheet will be used to create a part from prescribed round stock, between centers on the milling machine. When setup, and stock are available, a cycle start can be possible within one hour of CAD model receipt.
- The use case is a tradeoff between engineering planning and setup time for an extended lights-out machining cycle.